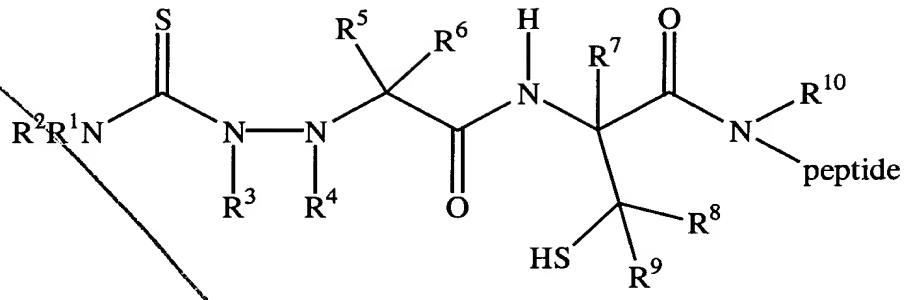

wherein R^1, R^2, and R^3 independently are selected from the group consisting of H, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, heterocycloalkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkaryl, and a protecting group that can be removed under the conditions of peptide synthesis, provided that at least one of R^1, R^2, or R^3 is H,

R^5, R^7, R^8, R^9 and R^{10} independently are selected from the group consisting of H, lower alkyl, substituted lower alkyl, aryl, and substituted aryl, and R^8 and R^9 together or R^7 and R^9 together may form a cycloalkyl or substituted cycloalkyl ring,

R^4 and R^6 together form a direct bond or are independently selected from the group consisting of lower alkyl, substituted lower alkyl, aryl, and substituted aryl, and wherein NR^{10} is located at the N-terminus of said peptide, or is located on an amino acid side chain of said peptide,

and then contacting said solution with a radionuclide and recovering the radiolabeled peptide.

25. A method according to claim 24, wherein R^1 is H.

26. A method according to claim 24, wherein R^3 is H.

27. A method according to claim 24, wherein R^4 is H.

28. A method according to claim 24, wherein R^4 and R^6 together form a direct bond.

29. A method according to claim 24, wherein R^5 is H.

30. A method according to claim 24, wherein NR^{10} is located at the N-terminus of said peptide.

31. A method according to claim 24, wherein NR^{10} is located on an amino acid side chain of said peptide.

32. A method according to claim 25, wherein R^2 is lower alkyl or substituted or unsubstituted phenyl.

33. A method according to claim 32, wherein R^2 is H.

34. A method according to claim 33, wherein R^3 is H.

35. A method according to claim 34, wherein R^4 and R^6 together form a direct bond.

36. A method according to claim 34, wherein R^5 is H.

37. A method according to claim 36, wherein R^7, R^8, and R^9 each are H.

38. A method according to claim 37, wherein R^2 is phenyl.

39. A method according to claim 37, wherein R^2 is methyl.

40. A method according to claim 24, wherein R^8 and R^9 are methyl.

41. A method according to claim 24, wherein said peptide is selected from the group consisting of:

(Chel)γAbuNle<u>DHF$_d$RWK</u>-NH_2,

(Chel)γAbuHSDAVFTDNYTRLRKQMAVKKYLNSILN-NH_2,

KPRRPYTDNYTRLRK(Chel)QMAVKKYLNSILN-NH_2,

(Chel)γAbuVFTDNYTRLRKQMAVKKYLNSILN-NH_2,

(Chel)γAbuYTRLRKQMAVKKYLNSILN-NH_2,
HSDAVFTDNYTRLRK(Chel)QMAVKKYLNSILN-NH_2, <GHWSYK(Chel)LRPG-NH_2,
<GHYSLK(Chel)WKPG-NH_2, Ac$Nal_d$$Cpa_d$$W_dSRK_d$(Chel)LRP$A_d$-NH2 ,
(Chel)γAbuSYSNleDHF_dRWK-NH_2, (Chel)γAbuNle<u>DHF_dRWK</u>-NH_2 ,
(Chel)Nle<u>DHF_dRWK</u>-NH_2 ,
Ac-HSDAVFTENYTKLRK(Chel)QNleAAK<u>KYLND</u>LKKGGT-NH_2,
(Chel)γAbuHSDAVFTDNYTRLRKQMAVKKYLNSILN-NH_2,
(Chel)γAbuVFTDNYTRLRKQMAVKKYLNSILN-NH_2, (Chel)γAbuNle<u>DHF_dRWK</u>-NH_2^c,
<GHWSYK(Chel)LRPG-NH_2, <GHYSLK(Chel)WKPG-NH_2,
Ac$Nal_d$$Cpa_d$$W_dSRK_d$(Chel)LRP$A_d$-$NH_2$, <GHYSYLK(Chel)WKPG-$NH_2$,
<GHYSLK(Chel)WKPG-NH_2, $Nal_d$$Cpa_d$$W_dSRK_d$(Chel)WKPG-$NH_2$,
<GHWSYK_d(Chel)LRPG-NH_2, Ac$Nal_d$$Cpa_d$$W_dSRK_d$(Chel)LRP$A_d$-$NH_2$,
Ac$Nal_d$$Cpa_d$$W_dSRK_d$(Chel)LRP$A_d$-$NH_2$, Ac$Nal_d$$Cpa_d$$W_dSRK_d$(Chel)LRP$A_d$-$NH_2$,
<GHWSYK(Chel)LRPG-NH_2, AcK(Chel)F_d<u>CFW$_d$KTCT</u>-OH, AcK(Chel)DF_d<u>CFW$_d$KTCT</u>-OH, AcK(Chel)F_d<u>CFW$_d$KTC</u>T-ol, AcK(Chel)DF_d<u>CFW$_d$KTC</u>T-ol, (Chel)DF_d<u>CFW$_d$KTC</u>T-OH, K(Chel)DF_d<u>CFW$_d$KTC</u>T-ol, K(Chel)KKF_d<u>CFW$_d$KTC</u>T-ol, K(Chel)KDF_d<u>CFW$_d$KTC</u>T-OH, K(Chel)DSF_d<u>CFW$_d$KTC</u>T-OH, K(Chel)DF_d<u>CFW$_d$KTC</u>T-OH, K(Chel)DF_d<u>CFW$_d$KTC</u>D-NH_2, K(Chel)DF_d<u>CFW$_d$KTC</u>T-NH_2, K(Chel)KDF_d<u>CFW$_d$KTC</u>T-$NHNH_2$, AcK(Chel)F_d<u>CFW$_d$KTC</u>T-$NHNH_2$, K(Chel)F_d<u>CFW$_d$KTC</u>T-ol, and F_d<u>CFW$_d$KTC</u>TK(Chel)-NH_2,
wherein (Chel) is said radiometal-binding moiety.

42. A method according to claim 24, wherein said peptide contains at least one disulfide bond.

43. A method according to claim 42, wherein said peptide is a polypeptide.

44. A method according to claim 42, wherein said peptide is a protein.